
Department of Veterans Affairs



One-VA Enterprise Architecture Implementation Plan: FY 2002

April 22, 2002

Secretary's Vision for Enterprise Architecture¹

The Department of Veterans Affairs will be recognized as the leader in Enterprise Architecture within the Federal government. We will continuously benchmark the quality and delivery of our service with the best available and use innovative means and high technology to deliver world-class services to our Nation's veterans and their families, and our employees. As the entrusted stewards of veterans' information, we will ensure that only authorized personnel have access to veteran information and that our financial transactions are protected. Our highly skilled workforce of business and information technology professionals will be dedicated to ensuring that our Enterprise Architecture solutions are veteran-focused and developed in partnership with veterans groups and other organizations. Together, through our Enterprise Architecture, we will continuously strive to reach a higher standard in carrying out our vitally important mission.

Anthony J. Principi
Secretary of Veterans Affairs

¹ Excerpted from the *Department of Veterans Affairs Enterprise Architecture Strategy, Governance and Implementation* dated August 2001.

Department of Veterans Affairs CIO Promulgation

As the Department of Veterans Affairs Chief Information Officer (CIO), I do hereby formally promulgate the One-VA Enterprise Architecture Implementation Plan and approve its execution across the Department. This plan provides a way ahead for the One-VA Enterprise to align integrated technology solutions with the business needs of the Department.

A handwritten signature in black ink, reading "John A. Gauss". The signature is fluid and cursive, with a long horizontal stroke extending to the right.

John A. Gauss, Ph.D.
Assistant Secretary For Information and Technology
VA Chief Information Officer

Table of Contents

Secretary's Vision for Enterprise Architecture.....	i
Department of Veterans Affairs CIO Promulgation.....	ii
Table of Contents.....	iii
Section 1 - Introduction.....	1
Section 2 – Motivation: The Need for a One-VA Enterprise Architecture.....	8
Section 3 - The VA's Approach to Developing a One-VA Enterprise Architecture.....	10
Section 4 - The Zachman Framework for Enterprise Architecture.....	14
Section 5 - One-VA Enterprise Architecture As A Driver For Capital.....	19
Investment Planning and Project Management Oversight	
Section 6 - Near Term FY 2002 One-VA EA Development Efforts.....	23
Section 7 - A Project Managers (PMs) Perspective on the One-VA Enterprise.....	27
Architecture	
Appendix A: What is Enterprise Architecture? – OMB A-130 Definition.....	29

Section 1 - Introduction²

On Wednesday, April 4, 2001, the Secretary of Veterans Affairs testified before the House Veterans' Affairs Subcommittee on Investigations and Oversight and promised to reform the current out-of-date information technology architecture in use at the VA. He pledged to identify a new Enterprise Architecture that will end the current practice of maintaining "stovepipe" systems designs that use incompatible systems development, and he pledged to end the collection of data that does not yield useful information.

The mission statement adopted by the VA for its new Enterprise Architecture effort is as follows:

"The mission of VA's Enterprise Architecture is to develop and implement an evolutionary, high-performance One-VA information technology architecture aligned with our program/business goals that enables enterprise-wide data integration. VA's Enterprise Architecture will enable us to provide an accessible source of consistent, reliable, accurate, useful, and secure information and knowledge to veterans and their families, our workforce, and stakeholders to support effective delivery of services and benefits, enabling effective decision-making and understanding of our capabilities and accomplishments. The Enterprise Architecture will support VA's overall strategic goals."

The goals and objectives of the One-VA Enterprise Architecture will ensure the following:

- veterans will feel that we know who they are,
 - we will be better able to answer their questions about their specific issues,
 - we will effectively provide end-to-end services without frustrating them,
 - they will have access to our systems for their own needs, and,
 - they will believe that VA staff and systems are here to serve and honor them.
- Self-service by Internet and phone access will be available to veterans, 24 hours a day, 7 days a week.
 - Veterans will be able to apply for benefits and monitor the status of their applications via the Internet.
 - Telephone service and information centers will be enhanced to enable easy access to information and services.

² Major portions of this section including the mission statement and goals for Enterprise Architecture are excerpted from the *Department of Veterans Affairs Enterprise Architecture Strategy, Governance and Implementation* dated August 2001.

- Kiosks will be installed to provide access to information about benefits and services.
- VA will implement a One VA information framework that supports cost effective data integration and information sharing across program/business lines to provide a “single” source of consistent, reliable, accurate, timely, and secure information to veterans and their families, employees, and other stakeholders:
 - Veterans will only have to register once with VA.
 - Veteran information will be available anywhere, anytime, to any authorized user in real time, while maintaining data security and veteran privacy.
 - Telemedicine use will be enhanced to improve timeliness and quality of care for veterans and maximize remote provider consultation.
 - Enterprise Architecture will foster the organization and presentation of all relevant patient data in a way that directly supports clinical decision-making and program analysis. Timely access to clinical information by VA staff at multiple sites of care is paramount to ensure prompt service, continuity, and quality care.
 - Common and core data will be shared by VA’s operating elements, ensuring accessibility and avoiding redundancy.
 - Sharing and use of information with VA’s external partners will be enhanced. The partners include: the Social Security Administration; the Department of Defense; Health and Human Services; and other Federal, state, and local governments; educational institutions; lending institutions; and other programs/businesses.
- VA information systems will be high-performance systems that meet or exceed exemplary standards in businesses and government agencies:
 - Information systems characteristics will be adaptable, scalable, extensible, standards-based, open, maintainable, reliable, secure, component-based, common services oriented, veteran-connected, principle-based, and employ the best appropriate technology.
 - The “gold standard” will be established for information related to veteran care and serve as an “information supply chain” that clearly articulates ownership.

This One-VA Enterprise Architecture is strategic. That is, it provides guidelines and directions on what needs to be done, who will do it, and when it is to be completed. It contains sufficient detail to demonstrate that VA can and will, implement and use Enterprise Architecture in an effective manner to drive cross-functional integration across the Department. The One-VA Enterprise Architecture will be institutionalized as the way in which information assets are planned, developed and managed at the VA.

The Department's One-VA Enterprise Architecture is the "blueprint" for systematically defining and documenting the organization's desired (target) environment, and includes a sequencing plan that describes the path to transitioning VA to its target environment from today's extant (as-is) environment. An Enterprise Architecture Council (EAC) will be instituted that, consists of both business and technical representatives, to guide the Department's migration from today's "as-is" environment to the new target environment.

Specifically, the EAC will guide the One-VA Enterprise Architecture implementation across the Department, evolve the architecture as industry and technology advance, adapt the architecture as Department priorities and requirements evolve, and serve as a focal point for identifying and addressing issues that may arise as legacy systems migrate to the new architecture. The One-VA Enterprise Architecture is essential in order to optimize systems to better support the Department's mission and provide added value. This is to be accomplished in program/business terms (e.g., mission, objectives, goals, program/business functions, and information flows) and technical terms (e.g., software, hardware, data, communications, and system environments). This One-VA Enterprise Architecture Implementation Plan serves as the critical reference tool for the VA enterprise architects, executives, program/business managers, and information technology managers and workers involved in the development and execution of the One-VA EA. In addition, the plan details how the Department will evolve its One-VA EA on an incremental basis each fiscal year.

Architectural principles for the One-VA EA establish the first tenets and related decision-making guidance for designing and developing information systems. The Chief Enterprise Architect, in conjunction with the CIO, the Information Technology Board (ITB) and Enterprise Architecture Council (EAC), defined the following architectural principles that map to the organization's IT vision and strategic plans.

Appropriate to Purpose — The One-VA EA must be appropriately scoped, planned, and defined based on the intended use of the architecture.

Rationale: The architecture development effort needs direction and guidance to meet expectations for specific uses of the architecture end products. Detailed models may not be needed for high-level decision-making; similarly, simple, descriptive architectures may not provide enough information to support engineering choices.

Implications: The architecture must be generated with a specific purpose and for a specific audience to ensure it meets the expectations of its intended stakeholders.

Comply with Law — The One-VA EA must be compliant with the law as expressed in legislative mandates, executive orders, Federal regulations, and other Federal guidelines.

Rationale: VA must abide by laws, policies, and regulations. However, this does not preclude business process improvements that lead to changes in policies and regulations.

Implications: VA should be aware of laws, regulations, and external policies regarding the development of architectures and the collection, retention, management, and security of data. Changes in the law (Clinger-Cohen Act) and changes in policy (OMB Circular A-130) may drive changes in architectural processes or applications.

Facilitate Technology Change

Rationale: In the rapidly changing IT environment, VA needs tools to manage and control business and technical growth and change. As the technical development life cycle shortens, with new technologies replacing older ones every 18 months, VA requires an overarching architecture to capture systems design and operating environments.

Implications: The systems developer and the chief architect should ensure the coordination between technology investments and business practices. Architectures must be used in the evaluation function of the Capital Planning and Investment Control process.

Support VA Strategic Plan

Rationale: The target architecture has maximum value when it is most closely aligned with the organization's strategic plan and other corporate-level direction, concepts, and planning.

Implications: The target architecture must be developed in concert with strategic planners as well as the operational staff. As the strategic plan changes, so do the future environment and the target architecture.

Facilitate Architectural Change

Rationale: VA is constantly evolving towards its future. As today's architecture transitions to the target architecture, the target becomes VA's baseline architecture at some point in the future. The baseline architecture continuously moves and transitions toward the target architecture.

Implications: The target architecture is a rolling set of products, continually portraying the future environment. As a component of strategic planning and change management, the target architecture captures the future environment including data requirements and systems transitions. A sequencing plan is the VA's roadmap to systems migration.

Support 3 to 5 Year Planning Horizon

Rationale: Technology life cycles currently are in the neighborhood of 18 months, and new IT products appear almost constantly. Federal acquisition practices are aligning to these rapid changes, which means that VA's future information needs and technical infrastructure requirements are changing just as rapidly. Consequently, no one can accurately predict what business practices will prevail 10 to 20 years into the future and what type of IT capabilities and resources will be available.

Implications: While the business elements of the target architecture will be more stable in general, the technology elements of the target architectures will need to be revised and updated regularly. The sequencing plan, illustrating intermediate points in time, may become more valuable than the target architectures.

Encourage Standardized Business Processes and a Common Operating Environment

Rationale: Commonality improves interoperability, cost avoidance, and convergence. For example, the integration of architectural Activity Models and Operational Sequence Diagrams (on the business side) and the Technical Reference Model and technology forecasts (on the technical side) helps establish a COE within VA's logical and physical infrastructures.

Implications: The systems architect and the chief architect must ensure the coordination between technology investments and business practices. A COE grounded on standard business practices and data structures is essential.

Develop and Validate Accurate Architectural Information

Rationale: The architect is not vested with the organizational information. It is incumbent upon the architect to collect the needed architectural information from the members of the VA who possess the knowledge of the business processes and associated information. These subject matter experts tend to be operational staff, field representatives, systems developers, software designers, etc. The domain owners are the responsible managers of specific business areas.

Implications: The development of the architecture can be a slow process, dependent on the architect's access to subject matter experts and domain owners. The validity of the architecture can be limited by the accuracy of the collected data. Development of the architecture is an iterative process of data gathering and interviewing to obtain verification and validity checks of the architectural products.

Facilitate Future Data Collection, Storage and Access.

Rationale: Data, as a corporate asset, is key to an organization's vision, mission, goals, and daily work routine. The more efficiently an Agency gathers data, stores

and retrieves that data, and uses the data, the more productive the Agency. Information is power.

Implications: Business processes are best improved by streamlining the flow and use of data and information. The development of architectural Node Connectivity Descriptions, Information Exchange Matrices, and other information models will aid in the design of improved data management systems.

Control of Incongruous Technology

Rationale: The unquestioned adoption of new and innovative Information Technology (IT) products can easily lead to the introduction of incongruous IT products that result in a lack of interoperability in the existing enterprise infrastructure. To avoid this lack of interoperability, it will be necessary to carefully select and use proven standards based technologies and products.

Implications: The One-VA EA must be used in conjunction with the VA's investment review process and technology insertion plans. This reliance upon the One-VA EA as an integral component of IT decision-making will help safeguard against the introduction of incompatible products and support cybersecurity objectives.

Development of the One-VA EA is an evolutionary process that spans multiple years. As a result, this implementation plan will be updated at the start of each fiscal year in order to address the specific top-level activities and priorities to be undertaken that year. This Implementation Plan not only describes the broad perspective being taken on the One-VA EA, but also identifies the top-level activities to be undertaken in FY 2002 to develop and implement the One-VA EA.

The EA Implementation Plan is organized into the following sections:

Section 2 – Motivation: The Need for a One-VA Enterprise Architecture. This section describes why it is important for the Department to implement a One-VA EA.

Section 3 - The VA's Approach to Developing a One-VA Enterprise Architecture. This section discusses the approach the VA will take to evolve the One-VA EA and describes the procedures Enterprise Architects and IT project managers will use to populate (i.e., create and maintain) the One-VA EA.

Section 4 - The Zachman Framework. This section discusses how the procedures in the previous section relate to the Zachman Framework for Enterprise Architecture.

Section 5 - One-VA Enterprise Architecture as a Driver For Capital Investment Planning and Project Management Oversight. This section describes how the One-VA EA will be used within the capital planning and budget formulation process within the execution of

individual IT projects at the VA and within the project management oversight processes being established at the Department.

Section 6 - Near Term FY 2002 One-VA EA Development Efforts. This section describes the scope of One-VA EA development activities in fiscal year (FY) 2002 and identifies specific top-level tasks.

Section 7 - A Project Managers (PMs) Perspective on the One-VA Enterprise Architecture. This section discusses the proposed One-VA EA from the perspective of a project manager (PM). It gives answers to the question 'so what does this do for me.'

Section 2 – Motivation: The Need for a One-VA Enterprise Architecture

The VA, like many enterprises has historically approached information technology and systems development vertically along program and organizational lines. While such an organizational focus places developers in proximity to specific sets of users and may satisfy their needs, it results in vertical systems being developed with their own unique and sometimes proprietary data, software and technology that often fall far short of meeting the strategic needs of the enterprise and most importantly the needs of the customer. These issues have become magnified in recent years as organizations rely more heavily on the use of Internet technology, experience high degrees of network interconnection, and increasingly shift to a more customer-centric focus. Concomitantly, vertical implementations of information technology make it prohibitively complex and expensive to exploit the full power of network based business models. At the same time, the World Wide Web (WWW) makes obvious the process and information discontinuities across the enterprise due to vertical implementations. This vertical focus within the VA results in significant disconnects across the enterprise and is the uncoordinated face the VA presents to Veterans in its business processes, data consistency and accessibility, efficiency and effectiveness.

The new Enterprise Architecture directly targets these issues for resolution. Indeed, our charter is to span organizational and programmatic boundaries to consider the implications of Information Technology to best support our business. Mandated by the Clinger-Cohen Act³ passed by the Congress in 1996, Federal agency Chief Information Officers are charged to develop, maintain and facilitate the implementation of an integrated Enterprise Architecture across their Department. Additionally, within the Federal government there are numerous regulations and guidelines⁴ that govern the development and execution of information technology policy in order to better manage strategic plans, enhance IT acquisition, justify IT expenditures, measure IT performance, integrate new technologies, and manage information resources.

³ Public Law 104-106, section 5125, 110 Stat. 684 (1996).

⁴ OMB Circular A-130, Revised (Transmittal Memorandum No. 4); Capital Planning - OMB Circular A-11[44 U.S.C. 3506 (b) (2).]; Chief Financial Officer Act of 1990 (31 U.S.C. 902a5); Acquisition - Federal Acquisition Streamlining Act of 1994; and Federal Enterprise Architecture Framework, Version 1.1, September 1999; and others.

The primary purposes of the One-VA Enterprise Architecture are to *inform, guide, and manage* decisions for the enterprise; especially those related to information technology investments. A properly constructed EA will enable a planned approach to the development of information technology horizontally across the enterprise, that fosters coordination and integration, and is fundamentally driven by the business needs of the enterprise. And it will be an architecture that fosters coordination and integration that is fundamentally driven by the business needs of the enterprise. Its goal will be to foster the evolution to a component orientation; an approach that facilitates easier, quicker responsiveness to changing business needs and technology advances. Finally, the new One-VA EA will identify integration points and interdependencies between components that are driven by cross-functional business needs and executive management objectives.

This EA Implementation Plan details the VA's near term approach (focusing on FY 2002 activities) for developing key components of the One-VA EA and uses them to formulate of the FY2004 budget. The plan also addresses subsequent efforts to expand on the breadth and depth of certain architectural components developed in FY 2002 and discusses the efforts needed to maintain the architecture on a continuing basis. As a consequence, One-VA EA is not a product or activity with a specific arbitrary end date because it is an ongoing activity intended to keep the VA's IT contemporaneous with the critical needs of the Department's mission.

Section 3 - The VA's Approach to Developing a One-VA Enterprise Architecture

A fundamental tenet of VA's approach to enterprise architecture is that it is rooted in the needs of the major Enterprise Business Functions (EBFs) of the Department, or in the needs of the Key Enabling Functions (KEFs) required to support those business functions, as well as by the need to more effectively and efficiently serve Veterans and their families. For example, there are at least eight distinct EBF based direct interactions with Veterans across the enterprise: Medical Care Benefits, Compensation Benefits, Pension Benefits, Vocational Rehabilitation and Employment Benefits, Insurance Benefits, Education Benefits, Housing Benefits, and Memorial Services Benefits. Other significant EBFs of the Department include adjudication of Veterans Appeals, Medical Research and Medical Education. At the same time, there are numerous KEFs including Human Resources, Planning and Policy; Finance and Accounting, Management, Information Technology, Training and Education, Homeland Security, Eligibility and Registration, necessary to support the EBFs. While EBFs are typically externally focused, KEFs are equally important because they enable smooth operation of the overall enterprise, both internally and externally. The first step in building the One-VA Enterprise Architecture is to identify and define the EBFs and KEFs that comprise the enterprise, and agree on a top-level definition of scope for each function. From there we will characterize the major classes of corporate data associated with each of the EBFs and KEFs, as well as the major internal and external drivers (relative to the Department) that govern how they are carried out and the locations in which they are performed. Internal drivers will be derived from the Secretary's priorities, the Department's strategic plan, and key performance metrics established across the Department. External drivers will be derived from fundamental Veteran equities, statute, regulation, policy and other related areas.

Given that top-level characterization of the EBFs and KEFs that comprise the activities of the Department are defined, the next major task is to decompose them into progressively more detailed sub functions with their associated data classes. This will require a sufficient level of detail to enable real identification of duplication and redundancy across sub functions, across processes (defined here as a logical threads through multiple sub functions), or across data.

Ideally, this will be all encompassing across the enterprise and will require a uniform approach and level of detail in the decomposition effort across all the EBFs and KEFs. From a pragmatic perspective however, the One-VA Enterprise Architecture will be

evolved in multiple iterations. During each iteration specific functional areas will be prioritized for more in depth treatment. For example, Registration and Eligibility is a functional area that has repeatedly been identified as strategically important to the Department. Therefore, in the first iteration registration and eligibility will be one of several functional areas receiving more in depth treatment in the functional decomposition across all of the EBFs and KEFs.

This approach allows for the aggregation and regrouping of similar sub functions, processes and associated data from a horizontal perspective across the department to eliminate the redundancies and duplication. The result is a functional definition of the scope of new information systems.

Implicit in this reallocation from a functional perspective will be the creation of interdependencies and integration points across the enterprise. If multiple vertically oriented EBFs or KEFs utilize a sub function, process or associated data and if that element is implemented once rather than being redundantly embedded in each of multiple vertically oriented implementations, interdependencies and integration points will result. This identification of the scope of these new information systems in terms of their sub functions and processes, their associated data (using standardized data definitions across the enterprise) and their required integration points comprises an allocated functional baseline. This is one of the key products of the early One-VA EA efforts, providing not only definition but also constraints within which PMs must execute to remain in compliance with the One-VA EA. The Enterprise Architecture Council (EAC) comprised of both technology and business representatives of the Administrations and major staff offices will be the group through which this effort will be carried out under the stewardship of the Chief Enterprise Architect.

In parallel with creating an allocated functional baseline, VA will also create a Technical Reference Manual (TRM) and a Information Technology Standards Profile to provide a uniform set of building codes within which each project will execute. Together with the allocated functional baseline, this comprises a necessary and sufficient set of guidelines to achieve the goal of *“an evolutionary, high-performance One-VA information technology architecture aligned with our program/business goals that enables enterprise-wide data integration”*.

As each new project is approved, resourced and enters execution, the PM becomes the steward responsible (with the support of the Chief Enterprise Architect and the EAC) for creating additional architectural and design artifacts within the guidelines and constraints of the TRM, Standards Profile and allocated functional baseline as follows:

- Conducts more detailed development of the sub functions, processes and data to support development of both functional and technical requirements for the project to support subsequent prototyping and design efforts.

- Develops the project design baseline to support subsequent implementation and acquisition efforts.
- Establishes the as-built configuration baseline to support deployment.
- Prepares for in-service operation of the information system and collection of metrics to characterize actual performance (under the stewardship of operations personnel).

Note: This discussion is intended as a demonstration of the logical progression through multiple development stages and the corresponding population of the elements of the EA. It does not imply the use of a specific methodology or endorsement of a waterfall process methodology. Any of several methodologies can be used within specific projects to include Unified Process (UP) or Extreme Programming (XP).

The primary focus of the VA's EA efforts will be on development of the to-be architecture that is necessary to achieve the EA goals, which are stated earlier in this document. This is not intended to diminish the importance of understanding the as-is state of VA's information systems and architecture in support of specific work efforts outlined above. Analysis of the as-is state will certainly be a necessary work effort in the functional decomposition and reallocation by the EAC and Chief Enterprise Architect to produce the allocated functional baseline. It will also be necessary in the PM's development of transition plans and in accomplishing Enterprise Applications Interfaces (EAI) for legacy information systems that will not be completely replaced but will have to co-exist for a time with new information systems. The primary focus of the One-VA EA efforts however will be on development of the to-be architecture necessary to achieve the One-VA EA goals stated earlier in this document.

The approach in summary: There are six (6) tasks to perform. Some are performed in parallel and others are performed as ongoing tasks, as previously described. These tasks are:

- Task 1: Define the VA EBFs and KEFs to a sufficient level to describe the enterprise.
- Task 2: Decompose the EBFs and KEFs into progressively more detailed data classes and sub functions to identify overlaps, duplication, and redundancy.
- Task 3: Map the decomposition into a classification scheme to organize the corporate information developed. (As will be seen later in the document, the Zachman Framework will be used as the classification scheme to focus attention at the proper levels within the Department.) Select key services that significantly affect the Department's FY 2004 budget submission (critical new start projects and rebaselined projects) for further detailed decomposition.

- Task 4: Focusing on select critical services, such as Registration and Eligibility, allocate functions to the One-VA EA baseline. Develop integrated process maps.
- Task 5: Develop a Technical Reference Model and a Standards Profile to guide the One-VA EA development.
- Task 6: As new projects are proposed within the Department, review them as an element of the PM Oversight Milestone review process against the One-VA EA to ensure the projects are consistent with the Department's goals and architectural approach.

The first iteration in the development of the One-VA Enterprise Architecture is to be carried out over the remainder of FY 2002 focused on those elements of the One-VA EA most affecting the Department's FY 2004 budget submission. This includes the development of an allocated functional baseline for selected strategically important functional areas, proposed new start projects or significant rebaselining of existing projects such as registration and eligibility, and the development of a TRM and Standards Profile. Subsequent iterations in FY 2003 and beyond will further expand the breadth of the allocated baseline by adding more functional areas and, as appropriate, adding depth to functional areas from prior iterations. As IT projects are initiated to implement elements of the One-VA EA, they will further expand the depth of coverage beyond the allocated functional baseline, TRM and Standards Profile to include the requirements, design, as-built configuration and in-service operational performance information for each information system as discussed above. The specific content of iterations to the One-VA EA in FY 2003 and beyond will be the subject of updates to this implementation plan for subsequent fiscal years.

Section 4 - The Zachman Framework for Enterprise Architecture

The previous section describes the logical processes VA will use to establish the necessary and sufficient set of guidelines to achieve an integrated IT architecture. VA has adopted the Zachman Framework as a tool for organizing key products, such as the allocated functional baseline necessary to describe the VA architecture and guide the development of the VA-wide systems. The Zachman Framework as it is to be applied within VA, will capture all of the descriptive products discussed in the preceding section. This section describes how VA will use the Framework to achieve this result.

The Zachman Framework was derived from analogous structures found in the disciplines of Architecture and Construction of buildings, and in Engineering and Manufacturing. It classifies and organizes design artifacts created over the process of designing and producing complex physical products (e.g., buildings or airplanes.) The utility of such a classification scheme is to enable focused concentration on selected aspects of an object without losing a sense of the contextual, or holistic, perspective. In designing and building complex objects, there are simply too many details and relationships to consider simultaneously. However, at the same time, isolating single variables and making design decisions out of context results in sub-optimization with all its attendant costs and dissipation of energy. The Zachman Framework as applied to Information Technology architectures seeks to manage this complexity and permit focus on key aspects of design, construction, deployment and operations without losing the broader context of the overall enterprise-wide IT perspective.

A balance between the holistic, contextual view and the pragmatic, implementation view can be facilitated by a framework with the characteristics of any good classification scheme that allows for abstractions intended to:

- a. Simplify for understanding and communication, and
- b. Clearly focus on independent variables for analytical purposes, but at the same time,
- c. Maintain a disciplined awareness of contextual relationships that are significant to preserve the integrity of the object.

It makes little difference whether the object is physical, like an airplane, or conceptual, like an enterprise. The challenges are the same. How do you design, build and change it piece-by-piece so that it achieves its purpose without dissipating its value and raising its cost by optimizing the pieces yet sub-optimizing the object?

The Zachman Framework (Figure 1) is a six-by-six matrix of perspectives and focuses that contains 36 cells describing all aspects of any enterprise.

	DATA <i>What?</i>	FUNCTION <i>How?</i>	NETWORK <i>Where?</i>	PEOPLE <i>Who?</i>	TIME <i>When?</i>	MOTIVATION <i>Why?</i>	
SCOPE (CONTEXTUAL)	List of Things Important to the Business 	List of Processes the Business Performs 	List of Locations in which the Business Operates 	List of Organizations Important to the Business 	List of Events Significant to the Business 	List of Business Goals/Strat. Critical Success Factor 	SCOPE (CONTEXTUAL)
Planner	Entity = Class of Business Thing	Function = Class of Business Process	Node = Major Business Location	People = Major Organizations	Time = Major Business Event	Ends/Mean = Major Bus. Goal/Critical Success Factor	Planner
ENTERPRISE MODEL (CONCEPTUAL)	e.g. Semantic Model 	e.g. Business Process Model 	e.g. Business Logistics System 	e.g. Work Flow Model 	e.g. Master Schedule 	e.g. Business Plan 	ENTERPRISE MODEL (CONCEPTUAL)
Owner	Ent = Business Entity Rel = Business Relationship	Proc = Business Process IO = Business Resources	Node = Business Location Link = Business Linkage	People = Organization Unit Work = Work Product	Time = Business Event Cycle = Business Cycle	End = Business Objective Means = Business Strategy	Owner
SYSTEM MODEL (LOGICAL)	e.g. Logical Data Model 	e.g. Application Architecture 	e.g. Distributed System Architecture 	e.g. Human Interface Architecture 	e.g. Processing Structure 	e.g. Business Rule Model 	SYSTEM MODEL (LOGICAL)
Designer	Ent = Data Entity Rel = Data Relationship	Proc = Application Function IO = User Views	Node = I/O Device Connector = Storage Unit Link = Data Characteristics	People = Role Work = Deliverable	Time = System Event Cycle = Processing Cycle	End = Planned Situation Means = Action Assertion	Designer
TECHNOLOGY MODEL (PHYSICAL)	e.g. Physical Data Model 	e.g. System Design 	e.g. Technology Architecture 	e.g. Presentation Architecture 	e.g. Control Structure 	e.g. Rule Design 	TECHNOLOGY MODEL (PHYSICAL)
Builder	Ent = Segment/Table/etc. Rel = Foreign/Key/etc.	Proc = Computer Function IO = Data Elements/Data	Node = Hardware/System Software Link = Line Specifications	People = User Work = Screen Format	Time = Execute Cycle = Component Cycle	End = Condition Means = Action	Builder
DETAILED REPRESENTATIONS (OUT-OF-CONTEXT)	e.g. Data Definition 	e.g. Program 	e.g. Network Architecture 	e.g. Security Architecture 	e.g. Timing Definition 	e.g. Rule Specification 	DETAILED REPRESENTATIONS (OUT-OF-CONTEXT)
Sub-Constructor	Ent = Field Rel = Address	Proc = Language Stmt IO = Control Block	Node = Address Link = Protocol	People = Identity Work = Job	Time = Interrupt Cycle = Machine Cycle	End = Sub-condition Means = Step	Sub-Constructor
FUNCTIONING ENTERPRISE	e.g. DATA	e.g. FUNCTION	e.g. NETWORK	e.g. ORGANIZATION	e.g. SCHEDULE	e.g. STRATEGY	FUNCTIONING ENTERPRISE

Source: Zachman Institute for Framework Advancement, <www.zifacorp>, as of July 2000

Figure 1. The Zachman Framework for Enterprise Architecture

Each row of the Zachman Framework as applied at VA will be used to capture the perspectives of different stakeholders in the architecture.

Row 1 of the Framework is titled **Planner**. It describes VA's vision and mission from the perspective of the VA Secretary in terms of the EBFs and KEFs that define the work of the Department. It is both motivated and constrained by legislation and other external and internal drivers. In completing Row 1 of the Framework, VA will identify and define the **EBFs and KEFs**, and characterize them in terms of their major data classes, their internal and external motivations, where they are performed and by whom, and any associated business cycle (schedule). To support preparation of the FY 2004 budget submission, current efforts will focus on the functions, data classes, motivation and location as a first priority and subsequently capture the staff and schedule components of the Framework.

Row 2 of the Framework is titled **Owner**. It describes VA's business processes from the perspective of VA line and staff managers. It is constrained by Planner view in Row 1 and driven by VA business plans. In completing row 2 of the Framework, VA will

identify processes through the functions / sub functions and associated data developed in row 1. Duplication and redundancy in sub functions, processes and associated data will be identified. Through an allocation process they will be resolved to arrive at new definitions for the “to-be” sub functions, processes and data from a horizontally integrated perspective. This will form the ***allocated functional baseline*** for new Information Technology systems. To support preparation of the FY 2004 budget submission current efforts will focus on developing this allocated functional baseline for selected, strategically important areas addressed by new start projects or significant rebaselining of existing projects within the FY 2004 budget submission as a matter of first priority. Other areas, along with treatment of the people and schedule columns of the Framework at the *Owner* level, will be addressed as lower priority in FY 2002 efforts or added during subsequent iterations during FY 2003 and beyond.

As can be seen from the preceding discussion, both rows 1 and 2 of the framework are to be developed from a perspective that spans the overall enterprise. While they will be driven by requirements of vertically oriented programs, they must take a horizontal perspective that spans the enterprise in order to achieve the goals established for the One-VA EA. As such, the Chief Enterprise Architect will serve as the steward for information in rows 1 and 2 of the One-VA EA and will develop their content with the active participation of the EAC comprised of both architectural and business leadership representatives of the Department’s major line and staff organizations. As we proceed down the following rows of the Framework to perspectives other than Planner and Owner, these roles will shift, bringing individual PMs and operations staff into the picture.

Row 3 of the Framework is titled ***Designer***. It describes VA’s enterprise-wide logical information systems from the perspective of individual VA PMs. It is constrained by VA line and staff managers’ views in Row 2, driven by VA’s Information Technology Board (ITB), and integrated by VA Chief Enterprise Architect as the steward of rows 1 and 2. In completing row 3 of the Framework, VA will identify and prioritize candidate projects from the Secretary’s Strategic Plan and the Under Secretaries’ and Assistant Secretaries’ Business Plans as expressed in the Information Technology Board’s Plan. High-priority projects will be selected for initiation in FY 2004. These projects will be developed through Milestone’s 0 and 1 of the Capital Investment Planning (CIP) Process. Only artifacts necessary to address these milestones will be required at this stage. The project manager in consultation with the Chief Enterprise Architect will keep them integrated and consistent with business needs. These artifacts will define ***detailed functional and technical requirements baselines***.

Row 4 of the Framework is titled ***Builder***. It describes VA’s information systems from the perspective of Information Technology and is the responsibility of the VA PMs. It is constrained by the VA PMs’ detailed functional and technical requirements baselines view and driven by industry “best-practices” as documented in the VA TRM and Standards Profile. VA PMs will initiate the development of artifacts in row 4 in the form

of a **technical design baseline** in preparation for Milestone 2 and complete them for Milestone 3.

Row 5 of the Framework is titled **Subcontractor**. It describes VA's information systems from the perspective of information technology integrators and is the responsibility of the VA PMs. Row 5 artifacts are the **as-built configuration baselines** needed for Milestone 3.

Row 6 of the Framework is titled **Functioning Enterprise**. It is VA's operating business functions and processes with their supporting information systems from the perspective of VA users, customers and other stakeholders. It is constrained by their roles and responsibilities and driven by VA objectives and performance measures. At this stage in a project, stewardship again shifts from the PM to operations staff. In completing row 6 of the Framework, the **in-service performance measures** defined earlier in the development and project management process will be captured throughout the operational life of the information system.

Further definition of the precise approach VA will take to populate rows 3 through 6 of the framework as well as the task of actually populating these rows are efforts beyond the scope of this FY 2002 implementation plan. The architectural artifacts pertaining to individual information systems will be developed by individual PMs and operations staff, within guidelines established by the EAC and the Chief Enterprise Architect, as the development projects are initiated and progress through development to deployment and in service operations. In order to maximize the utility of VA's EA, VA guidelines for artifacts will focus to the greatest extent possible on the capture of primitive or atomic elements as denoted in the Zachman Framework, with composite models/artifacts derived from such primitive elements. Moreover, the appropriate business and technical representatives should validate the contents of artifacts. Framework rows 3 through 6 will not be further addressed in this version of the implementation plan.

The columns in the Zachman Framework take the perspective of six foundational interrogatives or types of artifacts; what (*data*), how (*functions*), where (*network*), who (*people*), when (*time*) and why (*motivation*). From a theoretical perspective, John Zachman says, there is no underlying or cardinal order to the columns, but there are logical orders depending on purpose. Business and enabling functions are a point where many focuses converge. For example, the IDEF0 function modeling technique, a Federal Information Processing Standard (FIPS Publication 183) is frequently used in Rows 1 and 2 of the Framework. IDEF0 represents **data** (Column 1) as inputs to, controls of or outputs from **functions** (Column 2). It also represents **networks** (Column 3), especially in the information technology sense, as mechanisms to accomplish **functions**. Finally, it accommodates **motivation** (Column 6) as the purpose for function modeling and displays it prominently on an IDEF0 diagram. **Time** (Column 5) is intentionally not represented in the IDEF0 technique. Although **people** (Column 4) are represented as mechanisms, because organizations (like technology) are subject to frequent changes, they do not contribute significantly to stable models.

This approach embodied by IDEF0 as a modeling technique in Rows 1 and 2 illustrates a logical order of importance among the columns that is reflected in the VA approach. **Motivation** (Column 6) to accomplish the VA mission is a dominant focus along with **Function** (Column 2) as the means to accomplish it while **data** (Column 1) and **networks** (Column 3) follow in supporting roles. While **people** (Column 4) and **time** (Column 5) are important to the overall architecture, **motivation, function, data** and **network** (Columns 6, 2, 1 and 3) offer the greatest opportunities for the One-VA EA to positively affect VA's mission effectiveness in the near term and will therefore be the priority focus areas during initial One-VA EA efforts.

As the One-VA EA is developed through iterative, evolutionary updates, a significant body of information and knowledge will be amassed at multiple levels of detail. To be useful the appropriate subsets of this body of knowledge must be broadly accessible by the large body of people involved in each of the six rows of the Framework. EA tools will be needed to facilitate the development, maintenance, and communication of One-VA EA products; architectural artifacts. Since VA has selected the Zachman Framework for EA, the ideal tools or tool set needs to facilitate the development, maintenance and communication of all the products that VA may use to populate all 36 cells of the Zachman Framework. Preliminary evaluations of available products suggest that no one tool meets all these criteria.

The CIO Council⁵ recommends that, "To increase the usefulness of any architecture, it is important to maintain the EA within an interactive architectural tool. Fortunately, there are many automated architecture tools available on the market today. The choice of tool should be predicated upon the organization's needs based on the size and complexity of its architecture. The Chief Enterprise Architect and architecture EAC core team may use tools (e.g., Microsoft's PowerPoint and Word) or high-tech tools (Rational Rose by Rational Corporation, Systems Architect by Popkin, or Framework by Ptech)."

While the One-VA EA team is conducting a tool evaluation, VA will use standard off-the-shelf products for these purposes. Development, maintenance and communication of the One-VA EA are all performed using Microsoft applications including Word, Excel, Access, PowerPoint, and Visio as recommended by the CIO Council. PowerPoint was used to quickly develop a Zachman Framework Portal that provides access to all VA architectural products for development, maintenance and communication. No existing EA products satisfied the VA need for a simple Zachman Framework interface to the architectural products. The Portal leverages our ability to manage One-VA EA artifacts produced in almost any tool in the short term while keeping our options open as new EA tools emerge and existing ones mature.

⁵ CIO Council, A Practical Guide to Federal Enterprise Architecture, Version 1.0, February 2001,

Section 5 - One-VA Enterprise Architecture As A Driver For Capital Investment Planning and Project Management Oversight

Figure 2, The Integrated Process Flow for VA Information Technology Projects, depicts the integrated process flow adopted by the Department for Information Technology projects. Within this flow, the major stages in the life cycle of a project from original identification of a need through to in-service support are identified along with five formal decision milestones; project initiation approval, prototype development approval, full system development approval, deployment approval, and a post implementation review. One-VA Enterprise Architecture will play a significant role in each of these formal decision milestones for IT projects.

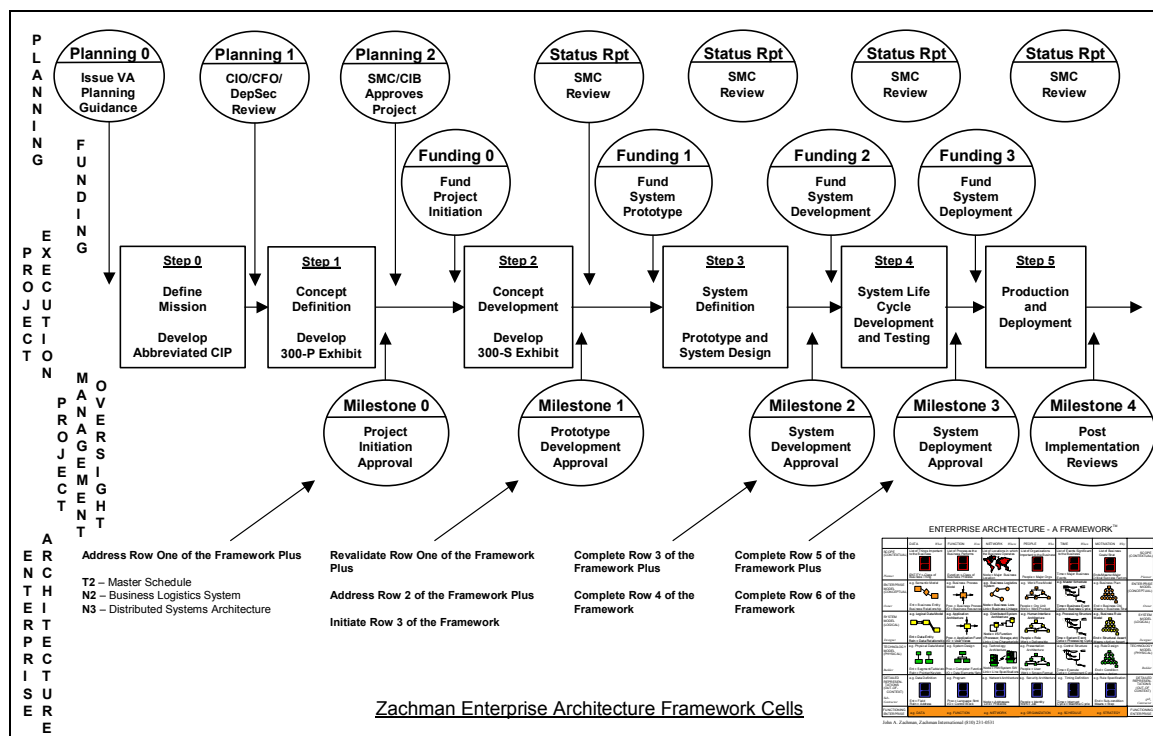


Figure 2. The Integrated Process Flow for VA Information Technology Projects.

At Milestone 0 to gain approval for project initiation, PMs are expected to focus on the information in row 1 of the EA Zachman Framework. They will be expected to identify which of the EBFs and KEFs (along with specific sub functions) the project will address along with associated major data classes involved, where in the enterprise the project will

be implemented, major motivations or constraints, and who will be affected by the project.

In addition, PMs are expected to provide a planned project schedule. From the perspective of a distributed architecture they are expected to go farther than the material in row 1 of the Framework to indicate where and how the project fits into the distributed architecture of the “*One-VA To-Be Physical Infrastructure*” shown in Figure 3. This will bound the project and position it with respect to the enterprise as a whole. Finally PMs are expected to indicate their planned technical approach, including major alternatives to be considered in their analysis of alternatives. The objective is to ensure projects are initiated in concert with the One-VA EA. The Project Decision Authority (PDA) will chair all Milestone reviews beginning with Milestone 0 and will ensure compliance with the One-VA EA in these specific areas prior to granting project initiation approval.

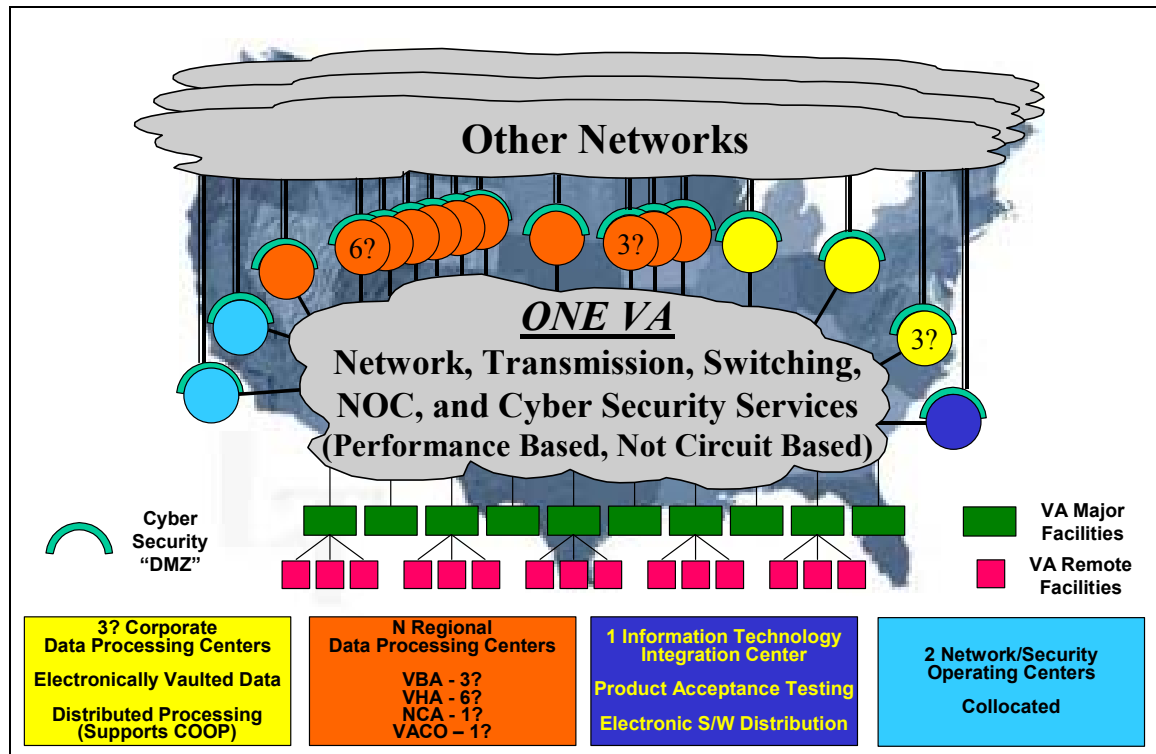


Figure 3. The To-Be One-VA EA Physical Infrastructure.

At Milestone I to gain approval for prototype or pilot implementation, PMs are expected to focus primarily on the information in row 2 of the Framework. The Framework established the allocated functional baseline to define information systems and their integration points. At Milestone I PMs are expected to revalidate the information relative to the One-VA EA addressed in the Milestone 0 review. In addition they are expected to show how the project fits into the allocated functional baseline and integration points established in row 2 of the framework. This allocated functional baseline provides constraints within which they must execute and must be respected by projects in implementation. In addition, they will be expected to take the functional requirements

and integration points contained within row 2 and the TRM and Standards Profile and begin development of the functional and technical requirements baseline for their project (the subject of row 3 of the Framework). The PDA will chair the Milestone I review and will ensure compliance with the One-VA EA in these specific areas prior to granting approval for the project to proceed with prototype or pilot implementation.

This activity also serves as a validation of the architecture. As projects map to EBFs and KEFs, there is an opportunity to identify shared capability that may not yet have surfaced; particularly in the case of KEFs. This milestone provides a feedback-loop into the EA process for future maturation of the architecture.

At Milestone II to gain approval for full-scale systems development or acquisition, PMs are expected to focus primarily on rows 3 and 4 of the Framework. They are expected to revalidate the information addressed at Milestone I in terms of compliance with the allocated functional baseline and integration points. In addition, if the prototype effort further details the process mappings for the EBFs and KEFs addressed, then they should be incorporated back into the One-VA EA in row 2 of the Framework.

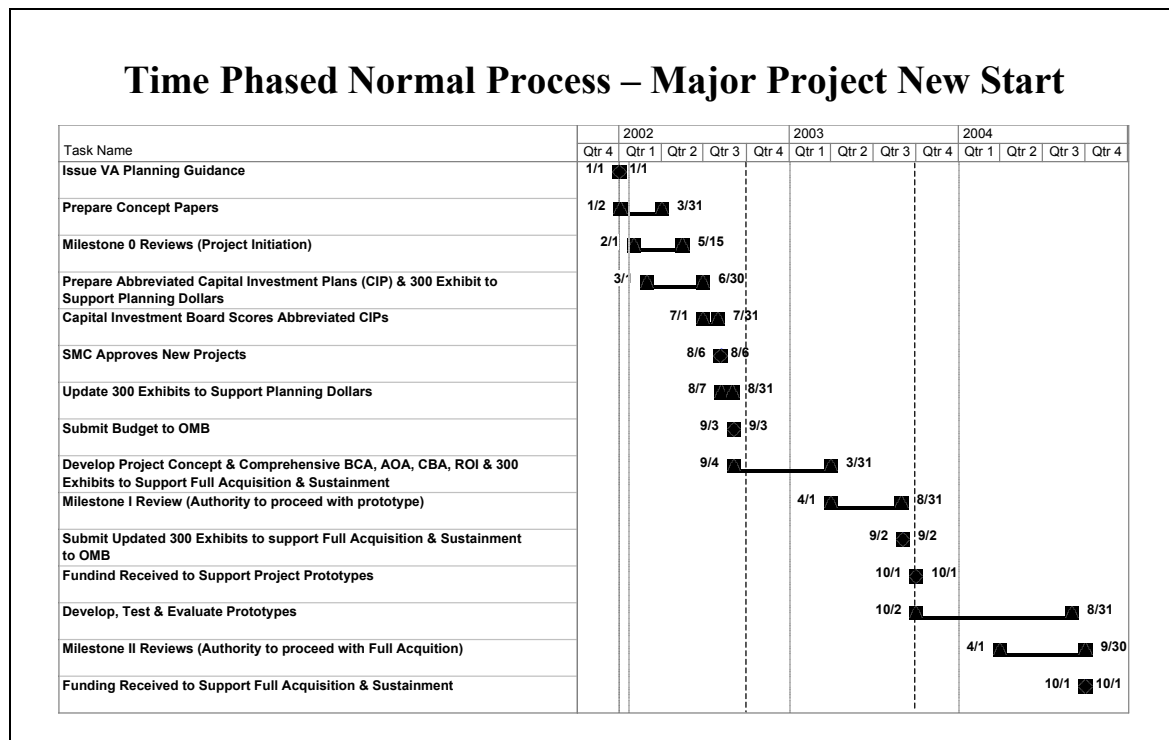


Figure 4. Project management oversight relationship to the budget cycle; nominal schedule of major events.

By this time, PMs are to have completed development of the detailed technical and functional requirements baseline for their project, which is the focus of row 3 of the Framework. They should also have initiated development of a design baseline and therefore initiate development of the content of row 4 of the Framework. In doing so

they must also show that they have adhered to the TRM and Standards Profile in the requirements baseline for the project. The PDA will chair the Milestone II review and will ensure compliance with the One-VA EA in these specific areas prior to granting approval for the project to proceed with full scale development or acquisition.

At Milestone III, to gain approval for deployment, PMs must have completed rows 4 and 5 of the Framework, providing the design and as-built configuration baselines. They must also have defined the performance metrics to be collected during in-service operation of the information system as the basis for evaluating goal achievement in row 6 of the Framework. Subsequently during Milestone IV post implementation reviews PMs are expected to report on the actual performance of the information systems in these areas.

Time phasing of the Milestone 0 and I reviews and therefore the early stages of addressing project compliance with One-VA EA is important with respect to the budget submission preparation cycle for new start projects. Figure 4, Project management oversight relationship to the budget cycle; nominal schedule of major events, shows the nominal timeline for preparation of an annual budget submission. It reflects the timing of Milestone 0 reviews for approval of project initiation in conjunction with the preparation of the Exhibit 300 information to support planning funding and prioritization of the project for incorporation in the Department's budget submission. It also shows the nominal timing for Milestone I review to approve prototype or pilot development upon receipt of planning funding, along with the preparation of Exhibit 300 information to support full acquisition funding. Finally it shows the timing of Milestone II reviews to authorize proceeding with full-scale development upon receipt of full acquisition resources. This illustrates the three way coupling for every IT project between One-VA EA, the budget submission preparation cycle and the Project Management Oversight process.

Section 6 - Near Term FY 2002

One-VA EA Development Efforts

Figure 5, Near term tasks for initial population of the One-VA Enterprise Architecture, presents an overview of planned key activities for the initial population of One-VA EA artifacts during FY 2002, as well as their use to support Milestone Reviews and the formulation of the FY 2004 budget submission. Each of the major tasks is briefly discussed in the following paragraphs. In addition, a synopsis of efforts to be undertaken in FY 2003 and beyond is provided.

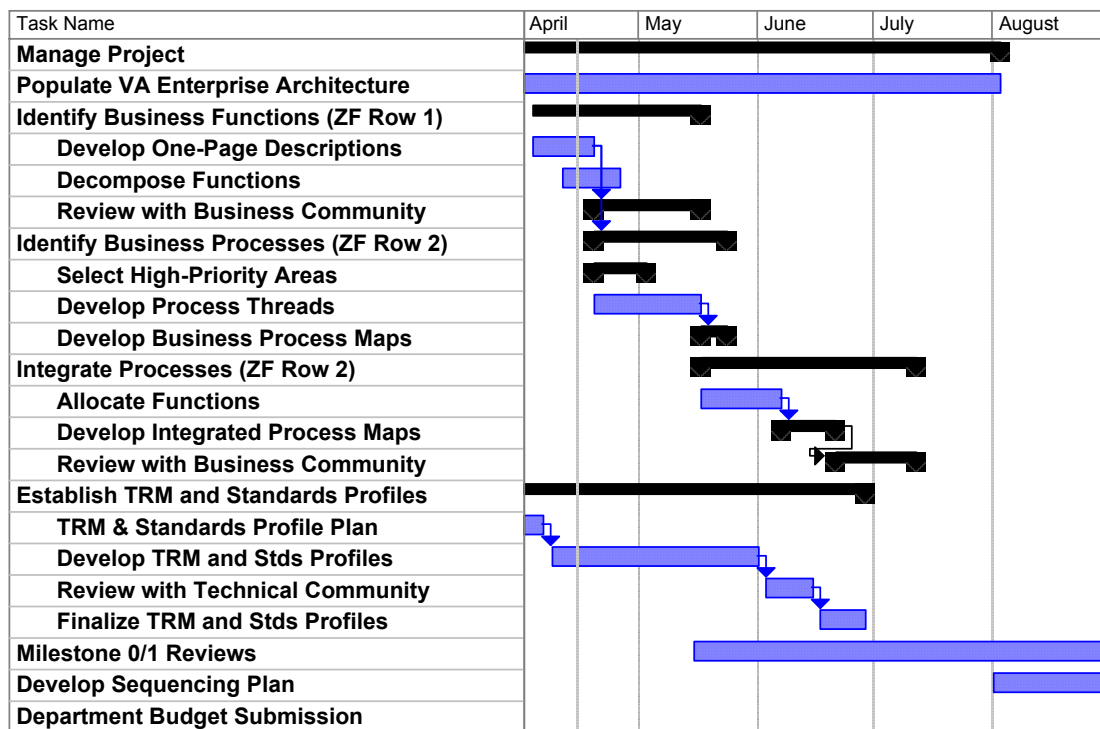


Figure 5. Near term tasks for initial population of the One-VA Enterprise Architecture.

The first two tasks identified on the Gantt chart are *Project Management* and *Populate the One-VA Enterprise Architecture*. A Tiger Team effort led by the Chief Enterprise Architect and the EAC will be conducted over the months of April to July to provide focus on the initial population of the One-VA EA. The Project Management task will focus on ensuring the strategic goals set for the effort are achieved and that schedule is maintained, particularly in so far as coupling with the FY 2004 budget submission

formulation process is concerned. This will ensure that the benefits of One-VA EA are supported by this initial effort:

- **Alignment**—ensuring the reality of the implemented enterprise is aligned with management’s intent
- **Integration**—realizing that the business rules are consistent across the organization, that the data and its use are immutable, interfaces and information flow are standardized, and the connectivity and interoperability are managed across the enterprise
- **Change**—facilitating and managing change to any aspect of the enterprise
- **Time-to-market**—reducing systems development, applications generation, modernization timeframes, and resource requirements
- **Convergence**—striving toward standards based IT project implementations across the enterprise using the technology standards contained in the TRM and Standards Profile.

Three major activities will be undertaken to populate the One-VA EA: *Identify Business Functions*, *Identify Business Processes* and *Integrate Processes*. These activities are discussed in the following paragraphs.

The *Identify Business Functions* task is aimed at identification, top-level definition, and functional decomposition of the EBFs and KEFs across the full scope of Department activities. A candidate list of EBFs and KEFs for the Team’s consideration is as follows:

ENTERPRISE BUSINESS FUNCTIONS (EBFs)

- Medical Care
- Medical Education
- Medical Research
- Compensation
- Pension
- Vocational Rehabilitation and Employment
- Education
- Housing
- Insurance
- Memorials and Burial

KEY ENABLING FUNCTIONS (KEFs)

- Management
- Acquisition and Materiel Management
- Human Resources
- Planning and Policy
- Finance and Accounting
- Information Technology
- Training and Education

- Homeland Security
- Veterans' Appeals
- Registration & Eligibility
- Information & Data Management

To reduce ambiguity in interpretation of these EBFs and KEFs the team will develop definitions of each to serve to:

- More easily identify duplication of activities,
- Scope the breadth and responsibilities of these activities,
- Provide sufficient understanding of the functions to recognize significant differences among apparently redundant functionality, and
- Drive decomposition to lower levels of detail where deemed necessary.

Major data classes will be identified for each EBF and KEF along with motivation and location information. Once the candidate list is refined, it will be decomposed to a sufficient level of detail to allow for identification of duplicate functions and data. While the EAC will ensure the appropriate ongoing involvement of the business community during this activity, the results will be submitted to the broader business community across the Department for review.

The *Identify Business Process* task will identify business processes from the functional decompositions and descriptions of the EBFs and KEFs. A process is defined as a thread through sub functions across multiple functions. This task sets the stage to achieve **alignment, integration, change**, and reduced **time-to-market**. Based on internal and external drivers including legislation and the VA Strategic Plan, several key areas will be selected for further focus. This selection will be performed by the EAC and validated through the ITB Plan to determine the high-priority projects in support of development of the FY 2004 budget submission. The selected areas will be subject to further refinement of the functional decomposition (with associated data classes) and process threads, and an integration effort to identify and eliminate redundancies. Refined process threads with their attendant sub functions and data classes will be developed and will comprise the allocated functional baseline. The result provides the target horizontal perspective across the EBFs and KEFs integrating function, process and data. It also establishes the “gold standard” (or gold copy) of key enterprise data classes as the single, authoritative source for critical elements of shared information across the Department.

Integration of the elements of the processes identified by the columns of the Zachman Framework, especially the data, function, and network columns, is essential to achieve logical **alignment** and **integration** and sets the stage for **change** and reduced **time-to-market**. Once again, while the EAC will ensure the appropriate ongoing involvement of the business community during this activity, the results will be submitted to the broader business community across the Department for review.

In parallel with the activities focused on population of the Framework described above, activity will be undertaken to develop a *Technical Reference Model (TRM) and Standards Profile*. This effort will not only consider interoperation requirements within the Department, but also will consider interoperation across other government Departments with which VA will routinely share information. Following initial development and review by the EAC, the TRM and Standards Profile will be submitted to the broader technical community for review. This task sets the stage to achieve **convergence**.

Together, the allocated functional baseline, TRM and Standards Profile form the necessary and sufficient architectural artifacts to define projects and their integration points with other elements in the overall architecture, to achieve actual **alignment, integration, change**, reduced **time-to-market, and convergence**. They will be used to support Project Milestone Reviews as discussed in previous sections for key new start projects contained within the Department's FY 2004 Budget submission. As IT projects are prioritized across the Department through the ITB and then the Strategic Management Council (SMC) a sequencing plan will also be developed.

Section 7 - A Project Managers (PMs) Perspective on the One-VA Enterprise Architecture

The One-VA Enterprise Architecture will impose specific tasks on PMs and force them to execute projects within certain functional and integration point boundary conditions. Such constraints are the necessary effects of driving integration horizontally across multiple business and functional lines that span the entire Department. One-VA EA will greatly benefit PMs in several important ways as they execute their projects. The tasks, constraints, and benefits that accrue as a result of the One-VA EA are discussed below.

Previous sections highlighted the EBF and KEF perspectives in relation to the One-VA EA and the rationalization of duplicative functions, processes and data in the allocated functional baseline produced as a key early product of the One-VA EA effort. This allocated functional baseline, along with the TRM and Standards Profile, form a necessary and sufficient set of documentation to functionally define the scope of an IT development project, identify its' major integration points with other elements of the enterprise architecture, and specify broad technical approaches and standards to be employed in the development of the information system development project. This is both a significant enabler and a constraint on a PM in executing his/her project. It is a significant enabler because it specifies many functional and integration requirements for the project in unambiguous terms, and frees the PM from having to develop this specification, or compete with other projects or PMs over responsibility for key functions and enterprise data classes across the Department. It also serves as a constraint, in that it ensures that these key functions and enterprise data classes are implemented once and only once across the Department. In so doing, it prevents PMs who have not been allocated responsibilities for processes, functions and data classes from developing duplicative versions in vertically focused style. Instead, it will force a PM to integrate his/her project with the authoritative source of the function or data as specified by the One-VA EA. This is a direct outgrowth of using One-VA EA to drive integration across the Department. That is, the One-VA EA will drive horizontal integration across what has traditionally been vertical, both in terms of business processes and in systems and technologies used to implement the business processes. This will result in the achievement of a major Department goal – veterans will perceive the VA and its services as one entity.

As the VA proceeds in developing its' One-VA EA and projects are incrementally phased into execution, PMs will have the added responsibility of developing the artifacts to populate the One-VA EA beyond the allocated functional baseline to include

requirements baselines, design baselines, as-built configuration baselines, and in-service performance metrics. These disciplines will instill rigor in the Department's IT development efforts and assist PMs in developing IT systems that meet requirements, deliver on schedule and stay within budget. Within the context of the "Integrated Process Flow for VA Information Technology Projects" described in Figure 2 (see Section 5), further population of the One-VA EA will be undertaken with a focus on productive and useful work efforts, and an overt minimization of bureaucratic requirements. The details of the requirements imposed on PMs for specific Milestone reviews were discussed in a previous section and will not be repeated here. As the One-VA EA repository is populated with these artifacts (e.g., business process definition, functional allocation, design, as-built, and performance artifacts), they will become very valuable repositories of corporate information and knowledge that will help project managers, as well as the business and technical representatives, with future development and maintenance efforts.

For individual PMs, compliance with One-VA EA comes in the form of two categories of requirements: (1) executing to the scope and constraints as defined in the allocated functional baseline, TRM and Standards Profile, and (2) providing the requirements, design, as-built configuration baselines, and in-service operations metrics artifacts to fully populate the One-VA EA repositories for their projects. In consideration of this, PMs will benefit from a clearer definition of the project scope and from the wealth of corporate and project knowledge inherent in the One-VA EA repository as the Department's EA matures over time.

Appendix A

What is Enterprise Architecture? OMB A-130 Definition⁶

Enterprise Architecture is the explicit description and documentation of the current and desired relationships among program/business and management processes and information technology. It describes the "current architecture" and "target architecture" to include the rules and standards and systems life cycle information to optimize and maintain the environment which the agency wishes to create and maintain by managing its information technology portfolio. The Enterprise Architecture must also provide a strategy that will enable the agency to support its current state and also act as the roadmap for transition to its target environment. These transition processes will include an agency's capital planning and investment control processes, agency Enterprise Architecture planning processes, and agency systems life cycle methodologies. The Enterprise Architecture will define principles and goals and set direction on such issues as the promotion of interoperability, open systems, public access, and compliance with the Government Paperwork Elimination Act, end-user satisfaction, and information technology security. The agency must support the Enterprise Architecture with a complete inventory of agency information resources, including personnel, equipment, and funds devoted to information resources management and information technology, at an appropriate level of detail. Agencies must implement the Enterprise Architecture consistent with the following principles:

- (i) Develop information systems that facilitate interoperability, application portability, and scalability of electronic applications across networks of heterogeneous hardware, software, and telecommunications platforms;
- (ii) Meet information technology needs through cost effective intra-agency and interagency sharing, before acquiring new information technology resources; and
- (iii) Establish a level of security for all information systems that is commensurate to the risk and magnitude of the harm resulting from the loss, misuse, unauthorized access to, or modification of the information stored or flowing through these systems.

⁶ Office of Management and Budget, *OMB Circular No. A-130*, November 30, 2000, <http://www.whitehouse.gov/omb/circulars/a130/a130trans4.html>.